

## Claims

1. A low-temperature NPP spent fuel reactor, wherein the core comprises fuel assembly, upper and lower core grid plates, control rod and its drive mechanism; the fuel assemblies are fixed through the upper and lower core grid plates; the control rod is inserted from the upper of the core into the lattice made up of the upper and lower core grid plates and the fuel assemblies; the top of control rod is connected with its drive mechanism; the core is located in the core vessel, where there are coolant inlet and outlet nozzles, connected with each other through tube and heat exchanger; wherein the said reactor is fuelled by NPP spent fuel.
2. The low-temperature NPP spent fuel reactor according to claim 1, wherein on the top of the core pool are the sealing cover and/or the airtight shield to constitute at least a gas shield.
3. The low-temperature NPP spent fuel reactor according to claim 1, wherein on the coolant inlet nozzle is provided a pressurizer or a large pool to improve the static pressure and maintain the pressure at the core outlet.
4. The low-temperature NPP spent fuel reactor according to claim 1, wherein within the core pool there is an underwater handling canal, which is connected with the spent fuel storage pond and replaces addition of reloading water layer.
5. The low-temperature NPP spent fuel reactor according to claim 1, wherein the residual heat cooler in the spent fuel storage pond and the electromagnetic valve on the connection tube constitute the passive residual heat removal system.